



U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**



DOT HS 809 184

December 2000

Drinking and Driving Trips, Stops by the Police, and Arrests:

Analyses of the 1995 Survey of Drinking and Driving Attitudes and Behavior

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its content or use thereof. If trade or manufacturer's names or products are mentioned, it is because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Technical Report Documentation Page

1. Report No. DOT HS 809 184	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Drinking and Driving Trips, Stops by Police, and Arrests: Analyses of the 1995 National Survey of Drinking and Driving Attitudes and Behavior		5. Report Date December 2001	
		6. Performing Organization Code	
7. Author(s) Paul Zador, Ph.D.; Sheila Krawchuck, M.S.; Brent Moore, Ph.D.		8. Performing Organization Report No.	
9. Performing Organization Name and Address Westat 1650 Research Boulevard Rockville, MD 20850-3195		10. Work Unit No. (TRAIS)	
		11. Contract or Grant No. DTNH22-98-P-05206	
12. Sponsoring Agency Name and Address National Highway Traffic Safety Administration Office of Research and Traffic Records Research and Evaluation Division 400 7 th Street, S.W., Washington, D.C. 20590		13. Type of Report and Period Covered Final Report October 1998 - December 2001	
		14. Sponsoring Agency Code	
15. Supplementary Notes Patricia Ellison-Potter, COTR, National Highway Traffic Safety Administration			
16. Abstract Since 1991, NHTSA has been conducting a representative national telephone survey on drinking and driving every other year to measure the status of attitudes, knowledge, and behavior of the general driving age public about drinking and driving. This report describes an analysis of the 1995 NHTSA survey data to assess self-reported drinking and driving prevalence using two key definitions - driving within 2 hours of drinking alcohol and driving over the legal blood alcohol concentration (BAC) limit. Additionally, using FBI crime reports, this report estimates drink-driving arrest rates. Overall, for the year 1995, 21.9 percent of the population 16 and over reported 791 million trips within two hours of drinking (3.9 per person 16 and over), 90 million trips above the legal limit for their state (44.9 per 100 persons 16 and over), 6.4 million stops (includes multiple stops per person) by police officer for suspicion of driving under the influence (3.2 per 100 persons 16 and over), and 1 million arrests for driving under the influence (0.5 per 100 persons 16 and over). On average, there was one arrest per 772 episodes of driving within two hours of drinking, per 88 episodes of driving over the legal limit, and per six stops for suspicion of driving under the influence. Males 16-17 tended to greatly over-report arrests compared to FBI reports and males 55+ tended to under-report their arrests.			
17. Key Words Drinking, driving, Impaired Driving Trips, DWI Arrests		18. Distribution Statement Document is available through the National Technical Information Service Springfield, VA 22161	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 49	22. Price

Drinking and Driving Trips, Stops by the Police, and Arrests: Analyses of the 1995 National Survey of Drinking and Driving Attitudes and Behavior

Paul Zador, PhD; Sheila Krawchuk, MS; Brent Moore, PhD

LIST OF TABLES

Table

- 1 Driving Within Two Hours of Drinking in the Past 12 Months* Among Persons Aged 16 Years and Older. Per Person Rate and Number of Episodes, and Number and Population Percentage of Drinking Drivers. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995
- 2 Driving Within Two Hours of Drinking in the Past 12 Months* Among Persons Aged 16 Years and Older, by Region. Per Person Rate of Episodes, Number of Episodes, Number of Drinking Drivers, Population Percentage of Drinking Drivers, Population Size, and Sample Size. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995
- 3 Percentage Distribution of Driver Blood Alcohol Concentrations, and Average Driver Blood Alcohol Concentration in the Most Recent Episode of Driving Within Two Hours of Drinking Among Drinking Drivers Aged 16 Years and Older, By Age.* National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995
- 4 Percentage Distribution of Driver Blood Alcohol Concentrations, and Average Blood Alcohol Concentration in the Most Recent Episode of Driving Within Two Hours of Drinking. Drinking Drivers Aged 16 Years and Older, by Drinker Type.* National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995
- 5 Driving Over the Legal Limit in the Past 12 Months Among Persons Aged 16 Years and Older. Per 100 Persons Rate and Number of Episodes, and Number and Population Percentage of Drivers Over the Legal Limit. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995
- 6 Stopped by Police Officer for Suspicion of Drinking and Driving, in the Past 12 Months Among Persons Aged 16 Years and Older. Per 100 Persons Rate and Number of Episodes, and Number and Population Percentage of Drivers Stopped. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995
- 7 Arrested by Police Officer for Drinking and Driving, in the Past 12 Months Among Persons Aged 16 Years and Older. Per 100 Persons Rate and Number of Episodes, and Number and Population Percentage of Drivers Arrested. National Survey of Drinking and Driving Attitudes and Behavior
- 8 Rate Per Drinking-Driving Arrest for Episodes of Driving Within Two Hours of Drinking, Driving Over the Legal Limit, and Being Stopped by the Police in the Past 12 Months, Among Persons Aged 16 and Older, by Drinker Type. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995
- 9 Number and Rate Per 100 Persons of Episodes for Impaired Driving Related Events for the US Driving Population and for the US Male Driving Population

LIST OF TABLES CONTINUED

Table

- 10 Drinking-Driving Arrests Among Persons Aged 16 and Older, by Age: Data for the Past 12 Months from the 1995 National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB) and for 1995 from the FBI
- A-1 Distribution of the 1995 United States Population and National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB) Survey Sample Size By Age, Race/Ethnicity and Education. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995
- A-2 Driving Within Two Hours of Drinking in the Past 12 Months Among Persons Aged 16 Years and Older. Comparison Between Yearly Number of Episodes and Annualized 30 Day Number of Episodes. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995

EXECUTIVE SUMMARY

Objectives – The objectives on this study were: 1) to assess and contrast self-reported prevalence of drinking and driving using two key definitions: driving within two hours of drinking alcohol, and driving over the legal blood alcohol concentration (BAC) limit; and 2) to estimate drinking and driving arrest rates.

Design – The study used combined data from the National Highway Traffic Safety Administration's (NHTSA's) 1995 National Survey of Drinking and Driving Attitudes and Behaviors¹ (NSDDAB) and FBI crime reports.

Setting – The 50 states and the District of Columbia provided the setting for this study.

Participants – A total of 4,008 noninstitutional persons 16 and over in the United States were the participants for this study.

Main Outcome Measures – The main outcome measures of this study consisted of weighted percentage and episode rates of respondents reporting: (1) driving within two hours of drinking, (2) driving over the legal BAC limit, (3) stops by police officers for suspicion of driving under the influence (DUI), and (4) arrests by police officers by age, race/ethnicity, education and drinker type as well as BAC distribution by sex, age, and drinking type based on the Quantity-Frequency-Variability (QFV) Index on most recent occasion of driving within two hours of drinking; and arrest rate by sex and age based on police records reported to FBI.

Results – Overall, for the year 1995, 21.9 percent of the population 16 and over reported 791 million trips within two hours of drinking (3.9 per person 16 and over), 90 million trips above the legal limit^A for their state (44.9 per 100 persons 16 and over), 6.4 million stops (includes multiple stops per person) by police officer for suspicion of driving under the influence (3.2 per 100 persons 16 and over), and 1 million arrests for driving under the influence (0.5 per 100 persons 16 and over). Almost all male percentages and rates exceeded the corresponding

^A As of the end of 1995, the legal limit was 0.08 in 12 states and 0.10 in other states and the District of Columbia.

female percentages and rates, frequently by several times. Episode rates of driving within two hours of drinking (i.e., number of episodes of driving within 2 hours of drinking/population group) was highest among men 55 and over (but these trips were mostly at low BAC levels), among White, non-Hispanic men, and among men with a college diploma. Episode rates of driving over the limit were highest among 18-20 year old men, among White, non-Hispanic men, and among men with a high school diploma. Males 18-20 reported the highest rate of being stopped for suspicion of drinking and driving, as was the case for Black, non-Hispanic males, and males with no high school diploma. Self-reported arrest rates were highest among 18-20 year old men, among Hispanic men, and among men with no high school diploma. On average, there was one arrest per 772 episodes of driving within two hours of drinking, per 88 episodes of driving over the legal limit, and per six stops for suspicion of driving under the influence. Males 16-17 tended to greatly over-report arrests compared to FBI reports and males 55+ tended to under-report their arrests.

Conclusions – While alcohol-impaired driving was relatively uncommon when compared to all driving, the number of trips initiated within two hours of drinking was still large. Drivers admitted to alcohol-impairment in about one in six trips, and to being over the legal limit in about one in nine trips. One important conclusion is that many drivers knew they were impaired even at BACs below their states' legal limit of 0.08 or 0.10. The arrest rate was about 1.1 percent for trips over the legal limit which only slightly exceeded the arrest rate of drivers who thought they had too much to drink.² A second important conclusion is that the enforcement levels prevalent in 1995 failed to deter from driving after drinking many drivers who thought they were impaired, over the legal BAC limit, and often both impaired and over the limit.

BACKGROUND AND INTRODUCTION

In 1997, the National Highway Traffic Safety Administration³ (NHTSA) classified 39 percent (N = 16,189) of total traffic fatalities that occurred in the United States as alcohol-related. According to NHTSA's definition, a fatal traffic crash is *alcohol-related* if either a driver or a nonoccupant (e.g., pedestrian) had a BAC of 0.01 or greater in a police-reported fatal traffic crash. NHTSA's approach of classifying alcohol-related traffic fatalities, even when driver BACs are quite low, is reasonable because of the strength of evidence for the impairment of driving-related skills at BACs as low as 0.02,^{4,5,6,7} and parallel evidence for rapid rise in relative fatal crash risk. Studies show, for instance, that each 0.02 increase in the BAC of a driver with a nonzero BAC approximately doubles the risk of fatal driver injury among drivers in single-vehicle crashes, regardless of age and sex.^{8,9} United States laws do not yet fully reflect the severity of alcohol-impairment at low BACs. For instance, as of May 2000, 31 states defined driving with BACs above 0.10 as a crime, *per se*, while only 17 states plus the District of Columbia set their *per se* limit at 0.08,¹⁰ even though lowering state BAC limits to 0.08 from 0.10 have been shown to reduce fatal motor vehicle crashes.¹¹ In contrast, most other industrialized nations have set BAC limits at 0.08 or lower and have had these laws in place for many years.¹² For example, Canada, Great Britain, Austria, and Switzerland set their BAC limits at 0.08, all states in Australia at 0.05, and France and Germany recently lowered it to 0.05, while Sweden's BAC limit is 0.02.

Over the last two decades many states strengthened both their laws and law enforcement against drinking and driving^{11,13} and achieved considerable success in reducing both prevalence of driving with nonzero BACs^{14,15} and the number of alcohol-related traffic fatalities and traffic injuries.⁴

In the 1993 Behavioral Risk Factor Surveillance System (BRFSS), respondents were asked whether they engaged in driving a motor vehicle after having "had perhaps too much to drink." As Liu et al.² estimated, United States adults admitted to over 123 million instances of driving after having too much to drink in 1993. Liu et al. classified driving after having perhaps too much to drink as an *episode of alcohol-impaired driving*. NHTSA adopted two alternative and

complementary survey items for querying respondents about drinking and driving in its series of biannual National Surveys of Drinking and Driving Attitudes and Behavior (NSDDAB). One of the survey items asked for the number of times a respondent drove a motor vehicle “within two hours after drinking alcoholic beverages.” The second item asked for the number of times a respondent drove “when you thought you were over the legal limit for alcohol.” We may rank these three formulations of self-reported drinking and driving in descending order of inclusiveness. Driving within two hours of drinking is clearly the most inclusive category of drinking and driving. We believe that definitely admitting to driving over the legal limit is less inclusive than vaguely conceding to having had too much to drink. The first is an admission of an illegal act, the second a hedged admission of bad behavior. Nonetheless, we recognize that there is a subjective element to comparing “having had perhaps too much to drink” and driving “when you thought you were over the legal limit.” NHTSA’s formulations asked for factual information in a nonjudgmental way, whereas the BRFSS formulation was somewhat judgmental. We also note that behavior perceived as socially undesirable (e.g., driving over the legal limit, driving after too much drinking) is frequently underreported in social surveys.¹⁶

NHTSA’s attitudes and behavior survey obtained information that enabled us to estimate driver BACs for the most recent trip of driving within two hours of drinking, and also to compute the Quantity-Frequency-Variability (QFV) Index of respondent drinker type following Cahalan, Cisin, and Crossley.¹⁷ We could, therefore, combine respondent drinker type and BACs to estimate driver BAC distributions under NHTSA’s definition of drinking and driving trips by drinker type, as well as by other characteristics.

The general theory of deterrence holds that behavior such as drunk driving “will be altered or abandoned to the extent that it is threatened with what is perceived as *certain, swift, and severe* punishment (italics added).”¹⁸ This observation underlies the importance of the perceived likelihood of arrest for DUI. In the 1995 wave of NSDDAB we analyzed in this study, respondents were also asked about being stopped by police officers on suspicion of DUI, and about being arrested for DUI. The availability of police-reported arrest rates obtained from FBI crime reports gave us a unique opportunity to assess self-reported DUI arrest rates against police-reported data by age and sex.

METHODS

The 1995 NSDDAB (OMB approved) was the third in a series of biannual random digit dial (RDD) telephone surveys covering the driving age population 16 and over in the United States.¹⁹ This survey series was sponsored by NHTSA to monitor self-reported attitudes and behavior related to drinking and driving among the general public. In this study, we analyzed data for the 4,008 respondents of the 1995 survey. To reduce bias, we used imputed values to replace missing values wherever data required for analysis were missing. In general, we imputed missing data based on average/typical respondent answers in the finest cell to which respondents could be classified. In particular, when age was missing, we imputed it in one of two ways. If respondents would not supply a specific age, they were asked to supply an age category. However, if no age or age category was recorded, age was imputed as the overall average of ages within the respondent gender group. When a respondent supplied an age category, but not an exact age, an exact age was imputed as the average age within the respondent's gender/age category. As other examples, we imputed within age/gender cell averages to missing responses for the question, "About how many times in the past 12 months did you drive when you thought you were over the legal limit for alcohol?" Similarly, we imputed average response within each frequency-of-drinking category (Question 15: every day, nearly every day, three or four days a week, one or two days a week, two or three days a month, and once a month or less) to the question: "In the past 30 days, how many times have you driven a motor vehicle within two hours after drinking alcoholic beverages?" In the 1995 NSDDAB, some questions on drinking and drinking and driving were posed for two reference periods: for the last 30 days and for the last 12 months. Preliminary analyses confirmed general experience among survey researchers^{20,21,22} that recent responses are more reliable than responses from longer recall periods. To annualize 30-day responses, we multiplied them by 12. We employed this method for the survey item on "driving within two hours of drinking" only, since of the four outcome measures, it was the only one asked for both reference periods.

We estimated driver BACs at the start of specific trips from responses about these trips and about the overall drinking pattern of respondents, and used such BAC estimates to classify trips within two-hours of drinking by driver BAC. Specifically, we followed Calahan et al.¹⁷ and

computed a Quantity-Frequency-Variability (QFV) Index from a series of five survey items and used it to classify respondents by drinker type as light, moderate, or heavy drinkers. In the first approximation, BACs depend on individual attributes (body weight and alcohol clearance rate (the rate at which the body metabolizes alcohol), the amount of alcohol consumed, and the time elapsed after the start of drinking.²³ For the last occasion when survey respondents drove within two hours of drinking, the 1995 NSDDAB included survey questions that enabled us to estimate the amount of alcohol consumed and the time elapsed between the start of drinking and the start of driving, as well as the respondents' self-reported body weight. We combined those data with age/sex/drinker type specific clearance rates received from ongoing laboratory research on alcohol-impairment⁷ and used NHTSA's BAC Estimator software²⁴ to estimate respondents' BACs at the start of their last trip within two hours after drinking.

Since self-reported data on sensitive subjects can be unreliable,¹⁶ we also compared self-reported arrest rates to those reported by the FBI. The FBI collects data on arrests, including data on DUI from nearly 10,000 police agencies reporting for jurisdictions with a population of about 190 million.²⁵ We obtained DUI arrest totals from the FBI for 1995 by state, sex, and age. We adjusted FBI arrest totals for agencies that did not report based on FBI estimates of DUI arrest totals that were published in the 1995 FBI Uniform Crime Reports.

All national estimates were derived using adjusted sampling weights.¹ For example, we estimated the total number of drinking drivers by sex and age, sex and race/ethnicity and sex and educational attainment by summing the adjusted weights of respondents in these categories who said they had driven within two hours of driving. We estimated the total number of drinking and driving episodes by the same demographic factors by summing the adjusted weights of self-reported episode counts.

RESULTS

Driving After Drinking

In 1995, 21.9% (N = 43.9 million) of the United States driving age population of about 201 million (Table A1 at the end of the report shows population distribution) were drinking drivers *who drove within two hours of drinking at least once in the past 12 months*. The number of

drinks these drivers consumed was not asked for in the survey question upon which this estimate was based. There were a total of 791 million drinking and driving episodes, or 3.9 episodes per person (Table 1) during the reference period (the past year). Males made up 70.1% of drinking drivers (N = 30.8 million out of 43.9 million) and accounted for 81% of all drinking and driving episodes. Figure 1.1 (figures and tables are at the end of the report) shows that the per person rate of episodes was over four times higher for males (6.6) than for females (1.5). The per person rate of episodes increased with increasing age among males from 0.3 at age 16-17 to 8.1 at or above age 55. The rate peaked for females in the 21-34 age group. As shown in Figure 1.2, among males, the episode rate was substantially higher for non-Hispanic Whites (7.8) than for Hispanics (3.1) or for non-Hispanic Blacks (2.3). Among females, the “other” race category had the highest episode rate (4.4) followed by non-Hispanic blacks with an episode rate of 1.7. Figure 1.3 indicates that among males, the episode rate peaked among graduates of 4-year college programs (10.0) at about five times the rate of males who did not finish high school. For females, the rate also peaked for 4-year college graduates.

There was substantial regional variation in the per person rate of driving within two hours of drinking (Table 2). The rate of such episodes was the lowest in the East South Central (3.0) and the South Atlantic (3.1) regions, and it was the highest in the Pacific (5.7) and New England regions (5.1).

Driver BACs

For the most recent episode of driving within two hours of drinking, average driver BACs among males declined with increasing age from 0.08 among drivers 16-17 to 0.01 among drivers 55 and older (Table 3). Correspondingly, the percentage of driver BACs below 0.02 increased steadily from 32.6% among the youngest males to 84.0% among the oldest males. The percentage of driver BACs exceeding 0.10, however, decreased from 48.8% among the youngest males to zero among the oldest males. Table 4 shows that average driver BAC increased with increasing severity of drinking type classification: it was 0.01 among light drinkers, 0.03 among moderate drinkers, and 0.05 among heavy drinkers. Correspondingly, the percentage of driver BACs below 0.02 decreased from 77.3% among light drinking males to 33.2% among heavy

drinking males. However, the percentage of driver BACs exceeding 0.10 increased from 2.6% among light drinking to 17.4% among heavy drinking males.

Driving Over the Legal Limit

Estimates based on the survey indicate that about 8.8 million persons 16 and over, self-reported that they *drove over the legal limit* (0.08 or 0.10 depending on the state) in the past 12 months of whom about 6.0 million were male (Table 5). There were a total of about 90 million such episodes, about 54 million by males. Episode rate per 100 persons peaked at 122.6 for males 18-20 (with a second peak of 99.0 in the 35-54 age group), and at 79.0 for females 35-54. Driving over the legal limit was admitted by a much higher percentage of non-Hispanic White drivers, both male (69.9) and female (43.9), than by drivers of the same sex from other race/ethnic groups. Males who completed high school (109.5), and females who had some college (110.6) admitted substantially more often to having driven over the legal limit than did other drivers of the same sex with varying levels of education.

Persons Stopped for Suspected DUI

Survey-based estimates indicated that about 4.4 million persons reported being stopped by a police officer for suspicion of drinking and driving, of whom about 3.5 million were male (Table 6). Stops averaged 5.4 per 100 males, and 1.1 per 100 females. For both sexes, the rate of stops peaked among persons 18-20, at 17.6 for males and at 4.5 for females. Non-Hispanic Black males (7.3) were stopped at higher rates than were drivers from any of the other race/ethnic groups. Males without a high school diploma (7.7), and female college graduates (1.6) were stopped more often than were other education groups of the same sex.

Arrests for Suspected DUI

Based on the survey, about 782,000 persons reported being arrested by a police officer for drinking and driving, of whom about 681,000 were male (Table 7). Arrests averaged 1.0 per 100 males, and 0.1 per 100 females. The arrest rate peaked at 3 per 100 males in the 18-20 age

group, and at 0.4 per 100 females in the 21-34 age group. Hispanic males (5.1) were arrested at a much higher rate than were male drivers from any of the other race/ethnic groups. And, also among males, arrest rates declined steadily with increasing education, from a peak at 3.6 per 100 males who did not complete high school to near zero among persons who continued beyond graduating from a 4-year college program.

Arrests by Drinker Type

Among the 831 survey respondents whose Quantity-Frequency-Variability (QFV) Index could be computed, per arrest episode rates of driving within two hours of drinking, driving over the legal limit, and stops by police increased from their respective lows among heavy drinkers to their respective highs among light drinkers (Table 8). Heavy drinkers drove within two hours of drinking an average of 293 times per arrest. In contrast, light drinkers drove more than five times as often between arrests, an average of 1,560 times. We also estimated comparable averages of 16 episodes of driving over the legal limit for heavy drinkers versus 240 for light drinkers, and 3 stops by police for heavy drinkers versus 12 for light drinkers. Thus, light drinkers were arrested per self-reported stop 4 times less frequently than heavy drinkers. We do not know the cause for this and the other differences, and can only speculate about them. One potential explanation is that relative to light drinkers, heavy drinkers under reported the frequency of their drinking and driving, as well as the frequency of police stops. Another is that police enforcement was able to effectively target the areas where heavy drinkers tend to drive.

COMMENT

Shorter Versus Longer Reference Period

We examined some parallel results for drinking and driving episodes based on 12 months rather than on 30-day self-reports. In general, the estimates based on the shorter period exceeded the estimates based on the longer period by about 30%. This is in line with the well-known tendency of recall to deteriorate over time so that longer recall periods increase the possibility of

omission because of memory loss.²⁶ Table A2 supports this and clearly indicates that overall, the 30-day annualized episode figures were about 30% higher than the yearly figures. Discrepancies varied by characteristic and were greatest for the 16-17 age group for both males (double) and females (nearly double), and for the group with no high school diploma for both males and females.

Comparison of Impaired Driving Related Events

It is informative to contrast, from Table 9, the episode rates for five types of impaired-driving related events: driving within two hours of drinking, driving after having had too much to drink, driving over the legal limit, stops by police officer, and arrests by police officer (survey-based and police reported). In 1995, respondents reported about 8.5 times more episodes of driving within two hours of drinking than episodes of driving over the limit. Comparing results for 1993 BRFSS and 1995 NSDDAB revealed, on average almost 40% more people admitted to having had too much to drink than to driving over the limit. This confirms that “nonexperts” (i.e., a sample of drivers) were well aware of what extensive research has also documented: many, if not most, drivers are impaired well below the typical legal limit for driving in the United States. Moreover, police officers stopped relatively few of those persons who drove over the legal BAC limit, and arrested even fewer.

Drinking Driver Characteristics

Sex, age, and drinker type affect various measures of drinking and driving in characteristic ways. First, males tended to have substantially higher involvement percentages and/or per person rates than females. Among males, age affected the per person rate of driving within two hours of drinking and the average BAC during such episodes, as represented by the most recent trip, in opposite directions: as age increased, episode rate increased, but average BAC decreased. In contrast, drinker type affected both episode rate and average BAC in the same direction: heavy drinkers had both a higher episode rate among drinking drivers and higher average BAC than light drinkers.

Remarkably, among male drivers, self-reported rates for driving within two hours of drinking peaked in the oldest age group, but rates for driving over the legal limit, stops by police officer, and arrests by police officer all peaked among young drivers, 18-20. Older drivers frequently drove with a positive but low BAC and were very rarely, if ever, stopped or arrested by police officers for suspicion of impaired driving (survey based and FBI based). In contrast, young drivers drove relatively less frequently with a positive BAC. However, when they did, their BACs tended to be relatively high, and the survey reported that police officers stopped and arrested them more often, although still extremely rarely. Among males, non-Hispanic Whites reported the highest rates of driving within two hours of drinking and driving over the legal limit, yet the survey reported that police officers stopped non-Hispanic Blacks and Hispanics at higher rates than non-Hispanic Whites, and police officers arrested Hispanics at the highest rate by far.

Among males, college graduates had the highest rate of driving within two hours of drinking, and high school graduates the highest rate of driving over the legal limit. Yet police officers stopped drivers with a only high school diploma, and drivers with no high school diploma at higher rates than they stopped other drivers (i.e., those with some college, college graduate or more than college graduate), and the arrest rate of drivers who did not complete high school was by far the highest among all groups.

United States' drivers undertook a total of roughly 230,000 million trips²⁷ in 1995. Combined with the estimates in this report, we find they had positive BACs in roughly 1 in 400 trips, and they were over the legal limit in 1 in 2,500 trips. Yet in 1995, 41% of total traffic fatalities were alcohol-related, and 31% of fatally injured passenger vehicle drivers had a BAC at or above 0.10. While crude, these comparisons do provide a context to research showing that the relative risk of involvement in fatal crashes rises with extreme rapidity to well over a 100 at BACs routinely observed in fatal crashes.^{9,11}

In this study, the average per trip arrest rate was 1 in 772 for drivers who drove within two hours of drinking, and 1 in 88 for drivers over the legal limit. Prior estimates varied from 1 in 82 to 1 in 2,000, depending on definitions and estimation methods.^{28,29} For example, Bietal, Sharp, and Glauz (1975)³⁰ cited one estimate of the probability of being arrested while making a 10-

mile trip with a BAC above 0.10 as being about 0.0015. From another of their studies, they estimated that the probability of arrest while driving at a BAC over 0.10 was about 0.0058. They arrived at this latter estimate by obtaining estimates from a random roadside survey for the probability of having a BAC in a certain range given that the driver had not been arrested. They obtained similar estimates for drivers who had been arrested from previous DUI arrest records. Using these values, an estimate of the unconditional probability of being arrested determined through a police department experiment, and Bayes' Theorem, they were able to estimate the probability of being arrested, given the driver has a BAC in a specific range.

Study Limitations

A major limitation of this study is that many of the estimates published here were based on self-reported data, and therefore, may include an unknown degree of reporting bias in addition to customary statistical variability. In this context, it is of particular interest that this was the first study that was able to directly compare estimates based on self-reported arrest rates to arrest rate estimates we generated from police arrest counts provided to us by the FBI. We note, however, that administrative records tend to have their own limitations as well. In this instance for example, the data were incomplete: the FBI arrest count estimates were based on only the 59% of precincts that provided such data in 1995. It was all the more gratifying that, at least at the aggregate level, police and self-reported arrest rates were in reasonably good agreement in that survey respondents underreported arrests only by about 30% (Table 10). However, when examined by age, these rates diverged substantially and the youngest persons overreported arrests by about 380%, while the oldest persons underreported by 100%.

Conclusions

During the last two decades, considerable progress has been made in reducing alcohol-related motor vehicle injuries and fatalities in the United States, especially among teenage drivers. Researchers are in general agreement that one major component of success was the reduced availability of alcohol to teenagers,³¹ due largely to increasing the legal minimum drinking age to 21 in all states,³² and to related efforts to lower BAC limits for young drivers.¹² Measures to

control the amount and circumstances of driving among teenagers by introducing graduated licensing and adopting other restrictions such as nighttime curfews will also help in the future. While some states have an effective combination of laws on their books, many still do not, and the enforcement of such existing laws in many states is lackadaisical at best.³³ Unfortunately, success in dealing with the persistent drinking driver has been far more limited.³⁴ While measures like Administrative License Revocation (ALR) have been shown to be somewhat effective,¹⁴ still not all states allow ALR, and as we have just seen, an overwhelming majority of high BAC trips were never even detected by the police. In part, because repeat offenders do not perceive the risk of apprehension to be high, many of them continue to drive without a license: in 1997, about 12% of all fatally injured drivers were suspended or revoked at the time of their crash (FARS,³ unpublished analyses). While a comprehensive review of policy options to combat impaired driving is beyond the objective of the present report, excellent summaries are available,³⁴ and we believe there is general agreement: In the interest of further progress, the likelihood of arrest for impaired driving must be increased.

The authors thank Dr. Herbert Moskowitz and Mr. Dary Fiorentino of Southern California Research Institute for providing us with clearance rate data, and Dawn Balmforth of Gallop Organization for her aid in better understanding the 1995 National Survey of Drinking and Driving Attitudes and Behavior (NSDABB) data file. This analysis and report was funded under NHTSA DTNH22-98-P-05206.

- ¹ National Highway Safety Administration. *National Survey of Drinking and Driving Attitudes and Behavior: 1995*. Washington, DC: U.S. Department of Transportation; 1996. Publication DOT HS 808 438.
- ² Liu S, Siegel PZ, Brewer RD, Mokdad AH, Sleet DA, Serdula M. Prevalence of alcohol-impaired driving results for the national self-reported survey of health behaviors. *Journal of the American Medical Association*. 1997;277:122-125.
- ³ National Highway Traffic Safety Administration. *Fatality Analysis Reporting System*. Washington, DC: U.S. Department of Transportation; 1995-96.
- ⁴ National Highway Safety Administration. *Alcohol Traffic Safety Facts: 1997*. Washington, DC: US Dept of Transportation; 1998
- ⁵ Moskowitz H, Burns MM, Williams AF. Skills performance at low blood alcohol levels. *Journal of Studies on Alcohol*. 1985;46:482-485
- ⁶ Moskowitz H and Fiorentino D. 2000. A Review of the Literature on the Effects of Low Doses of Alcohol on Driving-Related Skills. Final Report. U.S. Department of Transportation. National Highway Traffic Safety Administration, Washington, DC 20590.
- ⁷ Moskowitz H, Burns MM, Fiorentino D, Smiley A, Zador PL. 2000. Driver Characteristics and Impairment at Various BACs. U.S. Department of Transportation. National Highway Traffic Safety Administration, Washington, DC 20590.
- ⁸ Moskowitz H, Robinson C. Driving-related skills impairment at low blood alcohol levels. In: Noordzij PC, Roszbach T, eds. *Alcohol, Drugs, and Safety - T86*. Amsterdam: Elsevier Sciences; 1987.
- ⁹ Zador PL. Alcohol-related relative risk and fatal driver injuries in relation to driver age and sex. *Journal of Studies on Alcohol*. 1991;52(4):302-310.
- ¹⁰ Zador PL, Krawchuk SA, Voas RB. Alcohol-related relative risk of driver fatalities and driver involvement in fatal crashes in relation to driver age and gender: An update using 1996 data. *Journal of Studies on Alcohol*. 2000; 61(3):387-395.
- ¹¹ Insurance Institute for Highway Safety. *Fatality Facts: 1997 Motor Vehicle Deaths*; 1998.
- ¹² Hingson R, Heeren T, Winter M. Lowering state legal blood alcohol limits to 0.08 percent: the effect on fatal motor vehicle crashes. *American Journal of Public Health*. 1996;86(9):1297-1299.

- ¹⁴ Zador PL, Lund A, Fields M, Weinber K. Fatal crash involvement and laws against alcohol-impaired driving. *Journal of Public Health Policy*. 1989;10:467-85.
- ¹⁵ Voas RB, Wells J, Lestina D, Williams A, Greene M. Drinking and driving in the U.S.:The 1996 National Roadside Survey. *Accident Analysis and Prevention*, 30(2), 267-275; 1998.
- ¹⁶ Wright T, ed. *Statistical Methods and the Improvement of Data Quality*. Academic Press Inc; 1983.
- ¹⁷ Cahalan D, Cisin IH, Cossley HM. American drinking practices. New Brunswick, NJ: Rutgers Center on Alcohol Studies; 1969.
- ¹⁸ Ross HL. *Confronting Social Policy for Saving Lives*. New Haven and London: Yale University Press; 1992.
- ¹⁹ Voas RB, Lestina D, Greene M. Sampling procedures and methodology: 1996 National Roadside Survey, Insurance Institute for Highway Safety, 1005 N. Glebe Rd. Arlington, VA 22201; 1997.
- ²⁰ Silberstein AR. First wave effect in the US consumer expenditure interview survey. *Survey Methodology*. 1990;16(2):293-304.
- ²¹ Duncan GD, Kalton G. Issues of design and analysis of surveys across time. *International Statistical Review*. 1987;55(1):97-117.
- ²² Kalton G. Panel surveys: Adding the fourth dimension. Proceedings of Statistics Canada symposium on design and analysis of longitudinal surveys. 1992;7-18.
- ²³ Gibaldi M, Perrier D. *Pharmacokinetics*. 2nd ed. New York: Marcel Dekker Inc; 1982.
- ²⁴ Moskowitz H. *Driving under the Influence*. A report to Congress on alcohol limits. U.S. Department of Transportation; 1992.
- ²⁵ U.S. Department of Justice. *Crime in the United States: Uniform Crime Reports*. Washington, DC: Federal Bureau of Investigation; 1995.
- ²⁶ Kasprzyk D. Research issues in the survey of income and program participation. *Survey Methodology*. 1998;14(1):45-5819.
- ²⁷ Hu PS and Young JR. 1999. Summary of Travel trends: 1995 Nationwide Personal Transportation Survey US Department of Transportation, Federal Highway Administration.
- ²⁸ Anda RF, Remington PL, Williamson DF. A sobering perspective on a lower blood alcohol limit. *Journal of the American Medical Association*. 1986;256:3213.

²⁹ Maul KI, Kinning LS, Hickman JK. Culpability and accountability of hospitalized injured alcohol-impaired drivers. *Journal of the American Medical Association*. 1984;252:1880-1883.

³⁰ Beitel GA, Sharp MC, Glauz WD. Probability of arrest while driving under the influence of alcohol. *Journal of Studies on Alcohol*. 1975;36(1):109-116.

³¹ Sweedler BM, Quinlan KE. *The NTSB's proposals for reducing youth highway crashes - two years of progress*. Washington, DC: National Transportation Safety Board; 1995.

³² Wagenaar CA. Minimum drinking age and alcohol availability to youth: issues and research needs. National Institute of Alcoholism and Alcohol Abuse Research Monograph; 1993;25:175-200.

³³ Mothers Against Drunk Driving. Rating of States. Washington DC; 1998.

³⁴ Sweedler, BM. Strategies for Dealing with the Persistent Drinking Driver. National Transportation Safety Board, Washington, DC 20594. 1995.

Figure 1.1 - Per person rate of drinking and driving episodes by age

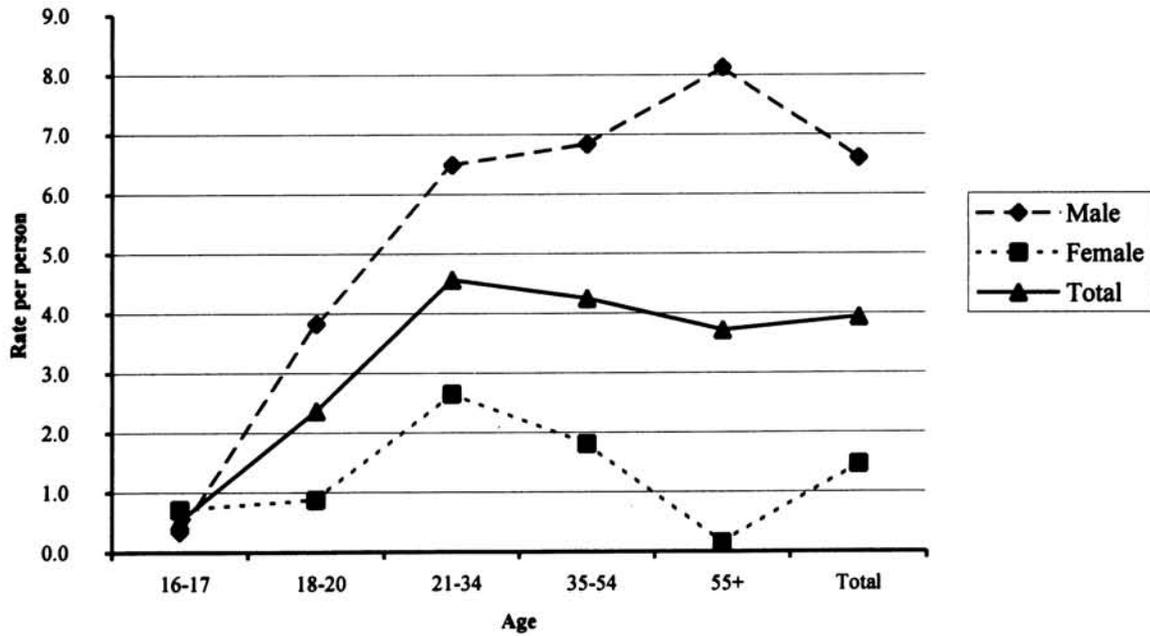


Figure 1.2 - Per person rate of drinking and driving episodes by race/ethnicity

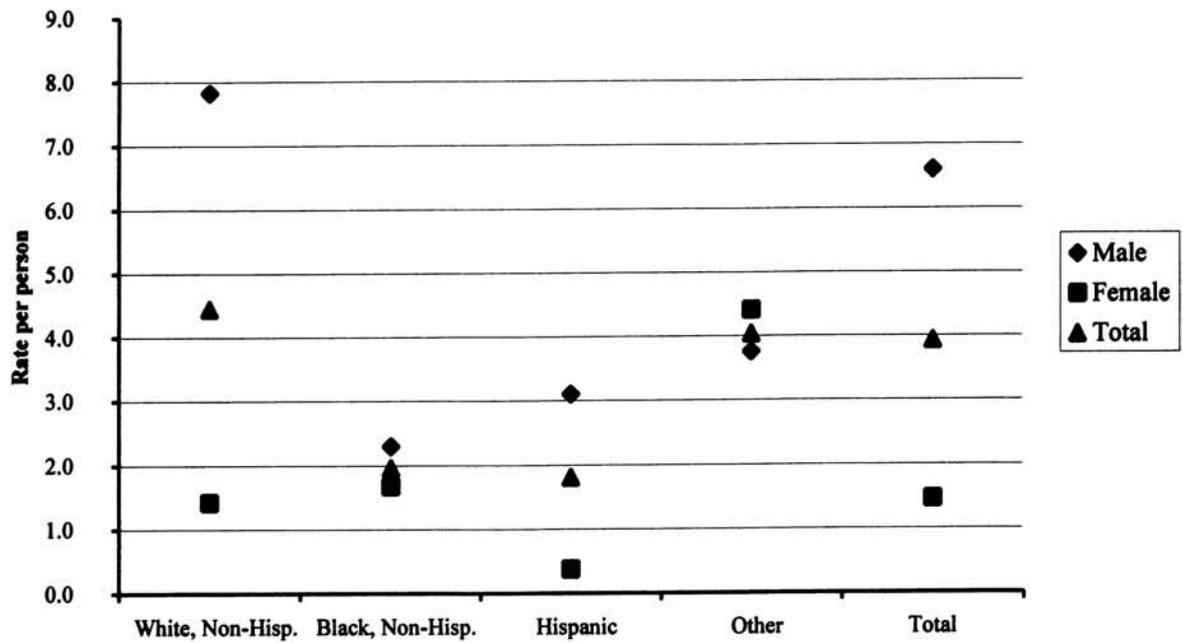


Figure 1.3 - Per person rate of drinking and driving episodes by education

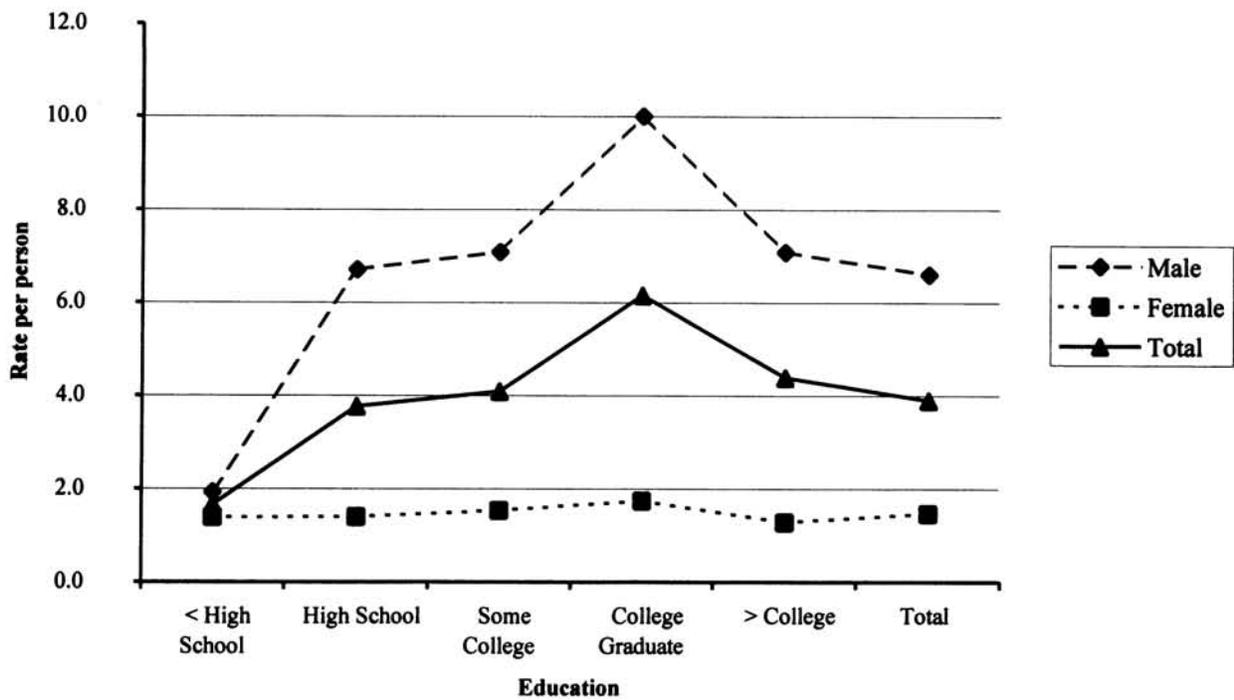


Table 1.—Driving Within Two Hours of Drinking in the Past 12 Months* Among Persons Aged 16 Years and Older. Per Person Rate and Number of Episodes, and Number and Population Percentage of Drinking Drivers. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995

Characteristic	Male				Female				Total			
	Rate Per Person	Episode (in 000's)	# of Drivers (in 000's)	% of Population	Rate Per Person	Episodes (in 000's)	of Driver (in 000's)	% of Population	Rate Per Person	Episodes (in 000's)	# of Drivers (in 000's)	% of Population
Age												
16-17	0.3	1640	245	5.1	0.7	3159	187	4.2	0.5	4799	432	4.7
18-20	3.8	16427	866	20.1	0.9	3670	348	8.3	2.4	20098	1214	14.3
21-34	6.5	173221	10953	41.0	2.6	71035	5147	19.1	4.6	244256	16100	30.1
35-54	6.8	251002	12474	33.9	1.8	70617	6474	16.6	4.2	321619	18948	25.0
55+	8.1	195610	6302	26.2	0.2	4546	924	3.1	3.7	200156	7226	13.4
Total	6.6	637900	30839	31.9	1.5	153027	13081	12.5	3.9	790928	43920	21.9

Table 1.—Driving Within Two Hours of Drinking in the Past 12 Months* Among Persons Aged 16 Years and Older. Per Person Rate and Number of

Episodes, and Number and Population Percentage of Drinking Drivers. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995

(cont).

Race/ethnicity

White, Non-Hisp.	7.8	567657	25515	35.2	1.4	115416	11259	13.9	4.4	683074	36774	23.9
Black, Non-Hisp.	2.3	21513	2201	23.5	1.7	17949	680	6.3	2.0	39462	2881	14.3
Hispanic	3.1	30805	1827	18.4	0.4	3330	820	9.2	1.8	34135	2647	14.1
Other	3.8	17926	1296	27.1	4.4	16332	322	8.7	4.0	34258	1618	19.1
Total	6.6	637901	30839	31.9	1.5	153027	13081	12.5	3.9	790929	43920	21.9

Education

< High School	1.9	30352	1901	12.1	1.4	22145	833	5.2	1.7	52497	2734	8.6
High School	6.7	206653	9169	29.7	1.4	53283	3567	9.4	3.8	259936	12736	18.5
Some College	7.1	163785	7255	31.4	1.5	41398	3917	14.5	4.1	205183	11172	22.3
College Graduate	10.0	160619	7654	47.7	1.7	24275	2953	21.1	6.2	184894	10607	35.3
> College	7.1	76492	4860	45.0	1.3	11927	1811	19.4	4.4	88418	6671	33.1
Total	6.6	637901	30839	31.9	1.5	153028	13081	12.5	3.9	790928	43920	21.9

*Data for the past 12 months was obtained by annualizing 30-day data.

Table 2.—Driving Within Two Hours of Drinking in the Past 12 Months* Among Persons Aged 16 Years and Older, by Region. Per Person Rate of Episodes, Number of Episodes, Number of Drinking Drivers, Population Percentage of Drinking Drivers, Population Size, and Sample Size.

National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995

Total						
Region	Rate Per Person	Episodes (in 000's)	Number of Drivers (in 000's)	of Populatio in Region	Population (in 000's)	Sample size
New England	5.1	54741	3053	28.6	10671	201
Middle Atlantic	4.1	122586	6799	22.5	30228	573
East North Central	3.4	113034	8880	26.8	33150	630
West North Central	4.0	54958	3721	26.9	13810	279
South Atlantic	3.1	108463	6482	18.3	35459	730
East South Central	3.0	35693	1629	13.6	11984	242

Table 2.—Driving Within Two Hours of Drinking in the Past 12 Months* Among Persons Aged 16 Years and Older, by Region. Per Person Rate of

Episodes, Number of Episodes, Number of Drinking Drivers, Population Percentage of Drinking Drivers, Population Size, and Sample Size.

National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995 (cont).

West South Central	3.5	78600	4035	17.8	22618	460
Mountain	3.7	43097	2002	17.1	11700	247
Pacific	5.7	179756	7318	23.3	31366	646
Total	3.9	790928	43920	21.9	200986	4008

*Data for the past 12 months was obtained by annualizing 30-day data.

Table 3. –Percentage Distribution of Driver Blood Alcohol Concentrations, and Average Driver Blood Alcohol Concentration in the Most Recent Episode of Driving Within Two Hours of Drinking Among Drinking Drivers Aged 16 Years and Older, By Age.* National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995

		Percent Blood Alcohol Concentration (mg/dL)							
		Episode Rate							
Sex	Age	Per Person	Average	0.00-0.0199 †	0.02-0.0499	0.05-0.0799	0.08-0.0999	0.10-0.1499	0.15+
Male	16-17	0.3	0.078	32.6	7.0	9.3	2.3	39.5	9.3
	18-20	3.8	0.047	49.3	10.0	21.4	2.1	7.1	10.0
	21-34	6.5	0.030	54.0	25.0	9.7	2.4	7.3	1.6
	35-54	6.8	0.020	71.9	17.3	5.5	2.1	1.1	2.1
	55+	8.1	0.008	84.0	13.5	1.0	1.5	0.0	0.0

Table 3. –Percentage Distribution of Driver Blood Alcohol Concentrations, and Average Driver Blood Alcohol Concentration in the Most Recent Episode

of Driving Within Two Hours of Drinking Among Drinking Drivers Aged 16 Years and Older, By Age.* National Survey of Drinking and Driving

Attitudes and Behavior (NSDDAB): 1995 (cont).

Female	16-17	0.7	0.066	0.0	44.0	24.0	24.0	8.0	0.0
	18-20	0.9	0.046	36.0	16.0	28.0	8.0	12.0	0.0
	21-34	2.6	0.029	54.3	20.4	17.7	1.4	4.4	1.9
	35-54	1.8	0.016	75.0	12.6	6.4	2.5	2.0	1.4
	55 +	0.2	0.009	86.9	3.3	9.8	0.0	0.0	0.0
Total	16-17	0.5	0.073	19.6	21.7	15.1	10.9	27.0	5.6
	18-20	2.4	0.047	45.5	11.7	23.3	3.8	8.5	7.1
	21-34	4.6	0.030	54.1	23.5	12.3	2.0	6.4	1.7
	35-54	4.2	0.018	73.0	15.7	5.8	2.2	1.4	1.9
	55+	3.7	0.008	84.5	11.9	2.4	1.2	0.0	0.0

*Estimates are not adjusted for the frequency of drinking-driving episodes in the last 12 months.

†Includes real zero values and negative values set to zero.

Table 4.—Percentage Distribution of Driver Blood Alcohol Concentrations, and Average Blood Alcohol Concentration in the Most Recent Episode of Driving Within Two Hours of Drinking. Drinking Drivers Aged 16 Years and Older, by Drinker Type.* National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995

Sex	Drinker Type	Rate Per DD Person	Average	Percent Blood Alcohol Concentration (in mg/dL)					
				0.00-0.0199 †	0.02-0.0499	0.05-0.0799	0.08-0.0999	0.10-0.1499	0.15+
Male	Heavy Drinker	38.5	0.052	33.2	28.6	12.9	7.9	14.8	2.6
	Moderate Drinker	16.7	0.028	58.4	22.1	10.0	3.1	5.2	1.2
	Light Drinker	20.4	0.014	77.3	15.8	3.9	0.4	0.7	1.9
Female	Heavy Drinker	18.5	0.034	53.4	15.4	15.4	7.1	8.7	0.0
	Moderate Drinker	12.6	0.036	49.5	17.4	21.6	1.9	5.7	4.0
	Light Drinker	11.5	0.016	72.3	14.9	8.4	1.9	1.8	0.7

Table 4.—Percentage Distribution of Driver Blood Alcohol Concentrations, and Average Blood Alcohol Concentration in the Most Recent Episode of Driving

Within Two Hours of Drinking. Drinking Drivers Aged 16 Years and Older, by Drinker Type.* National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995 (cont).

Total	Heavy Drinker	34.9	0.049	36.8	26.3	13.3	7.8	13.7	2.1
	Moderate Drinker	15.5	0.030	55.9	20.8	13.2	2.8	5.3	2.0
	Light Drinker	17.4	0.015	75.6	15.5	5.5	0.9	1.0	1.5

*Estimates are not adjusted for the frequency of drinking-driving episodes in the last 12 months.

†Includes real zero values and negative values set to zero.

Table 5.—Driving Over the Legal Limit in the Past 12 Months Among Persons Aged 16 Years and Older. Per 100 Persons Rate and Number of Episodes, and Number and Population Percentage of Drivers Over the Legal Limit. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995

Characteristic	Male				Female				Total			
	Rate Per 100 Persons	Episodes (in 000's)	# of Drivers (in 000's)	% of Population	Rate Per 100 Persons	Episodes (in 000's)	# of Driver (in 000's)	% of Population	Rate Per 100 Persons	Episodes (in 000's)	# of Driver (in 000's)	% of Population
Age												
16-17	8.6	410	148	3.1	6.4	284	39	0.9	7.5	694	187	0.02
18-20	122.6	5273	330	7.7	28.6	1200	155	3.7	76.2	6473	485	0.06
21-34	42.8	11411	2933	11.0	15.0	4027	1569	5.8	28.8	15438	4502	0.08
35-54	99.0	36377	2428	6.6	79.0	30829	1070	2.7	88.7	67206	3498	0.05
55+	1.9	467	147	0.6	0.0	0	0	0.0	0.9	467	147	0.00
Total	55.8	53938	5986	6.2	34.8	36340	2832	2.7	44.9	90278	8818	0.04

Table 5.—Driving Over the Legal Limit in the Past 12 Months Among Persons Aged 16 Years and Older. Per 100 Persons Rate and Number of Episodes, and Number and Population Percentage of Drivers Over the Legal Limit. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995 (cont).

Race/ethnicity

White, Non-Hisp.	69.9	50698	4568	6.3	43.9	35560	2340	2.9	56.2	86258	6908	0.04
Black, Non-Hisp.	17.6	1651	803	8.6	2.4	259	158	1.5	9.5	1910	961	0.05
Hispanic	6.7	667	339	3.4	2.1	184	99	1.1	4.5	851	438	0.02
Other	19.3	922	276	5.8	9.1	337	236	6.4	14.8	1259	512	0.06
Total	55.8	53938	5986	6.2	34.8	36340	2832	2.7	44.9	90278	8818	0.04

Education

< High School	30.8	4859	558	3.5	3.8	611	194	1.2	17.2	5470	752	0.02
High School	109.5	33740	2106	6.8	9.6	3664	1065	2.8	54.2	37404	3170	0.05
Some College	38.7	8963	1443	6.2	110.6	29856	841	3.1	77.5	38819	2284	0.05
College Graduate	34.3	5510	1503	9.4	11.2	1569	455	3.3	23.6	7078	1958	0.07
> College	8.0	866	377	3.5	6.9	641	278	3.0	7.5	1507	655	0.03
Total	55.8	53938	5986	6.2	34.8	36340	2832	2.7	44.9	90278	8818	0.04

Table 6.—Stopped by Police Officer for Suspicion of Drinking and Driving, in the Past 12 Months Among Persons Aged 16 Years and Older. Per 100 Persons Rate and Number of Episodes, and Number and Population Percentage of Drivers Stopped. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995

Characteristic	Male				Female				Total			
	Rate Per 100 Persons	Episodes (in 000's)	# of Driver (in 000's)	% of Population	Rate Per 100 Persons	Episodes (in 000's)	# of Drivers (in 000's)	% of Population	Rate Per 100 Persons	Episodes (in 000's)	# of Drivers (in 000's)	% of Population
Age												
16-17	5.0	239	148	3.1	3.9	174	142	3.2	4.5	413	290	3.1
18-20	17.6	757	353	8.2	4.5	187	148	3.5	11.1	944	501	5.9
21-34	7.0	1874	1649	6.2	2.3	614	485	1.8	4.6	2489	2134	4.0
35-54	4.5	1639	958	2.6	0.5	186	186	0.5	2.4	1825	1143	1.5
55+	2.9	704	378	1.6	0.0	0	0	0.0	1.3	704	378	0.7
Total	5.4	5214	3485	3.6	1.1	1161	961	0.9	3.2	6375	4446	2.2

Table 6.—Stopped by Police Officer for Suspicion of Drinking and Driving, in the Past 12 Months Among Persons Aged 16 Years and Older. Per 100 Persons Rate and Number of Episodes, and Number and Population Percentage of Drivers Stopped. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995

Behavior (NSDDAB): 1995 (cont).

Race/ethnicity

White, Non-Hisp.	5.2	3774	2659	3.7	1.1	860	799	1.0	3.0	4634	3458	2.3
Black, Non-Hisp.	7.3	684	278	3.0	1.4	153	60	0.6	4.2	837	338	1.7
Hispanic	6.4	637	429	4.3	0.5	41	41	0.5	3.6	678	470	2.5
Other	2.5	119	119	2.5	2.9	107	61	1.6	2.7	226	180	2.1
Total	5.4	5214	3485	3.6	1.1	1161	961	0.9	3.2	6375	4446	2.2

Education

< High School	7.7	1218	61	3.9	1.3	206	174	1.1	4.5	1424	792	2.5
High School	6.2	1916	1372	4.5	0.7	285	189	0.5	3.2	2201	1561	2.3
Some College	3.1	709	553	2.4	1.3	350	311	1.2	2.1	1059	864	1.7
College Graduate	4.4	713	611	3.8	1.6	224	224	1.6	3.1	937	835	2.8
> College	6.1	658	332	3.1	1.0	96	62	0.7	3.7	754	394	2.0
Total	5.4	5214	3485	3.6	1.1	1161	961	0.9	3.2	6375	4446	2.2

Table 7.—Arrested by Police Officer for Drinking and Driving, in the Past 12 Months Among Persons Aged 16 Years and Older. Per 100 Persons Rate and Number of Episodes, and Number and Population Percentage of Drivers Arrested. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995

Characteristic	Male				Female				Total			
	Rate Per 100 Persons	Episodes (in 000's)	# of Driver (in 000's)	% of Population	Rate Per 100 Persons	Episodes (in 000's)	# of Drivers (in 000's)	% of Population	Rate Per 100 Persons	Episodes (in 000's)	# of Drivers (in 000's)	% of Population
Age												
16-17	1.4	68	34	0.7	0.0	0	0	0.0	0.7	68	34	0.4
18-20	3.0	131	97	2.3	0.0	0	0	0.0	1.5	131	97	1.1
21-34	2.2	587	414	1.6	0.4	101	101	0.4	1.3	689	515	1.0
35-54	0.4	136	136	0.4	0.0	0	0	0.0	0.2	136	136	0.2
55+	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0
Total	1.0	923	681	0.7	0.1	101	101	0.1	0.5	1024	782	0.4

Table 7.—Arrested by Police Officer for Drinking and Driving, in the Past 12 Months Among Persons Aged 16 Years and Older. Per 100 Persons Rate and Number of Episodes, and Number and Population Percentage of Drivers Arrested. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995 (cont).

Race/ethnicity

White, Non-Hisp.	0.5	378	344	0.5	0.1	67	67	0.1	0.3	445	411	0.3
Black, Non-Hisp.	0.4	40	40	0.4	0.3	34	34	0.3	0.4	74	74	0.4
Hispanic	5.1	505	297	3.0	0.0	0	0	0.0	2.7	505	297	1.6
Other	0.0	0	0	0.0	0.1	0	0	0.0	0.0	0	0	0.0
Total	1.0	923	681	0.7	34.8	101	101	0.1	0.5	1024	782	0.4

Education

< High School	3.6	573	332	2.1	0.0	0	0	0.0	1.8	573	332	1.0
High School	0.8	257	257	0.8	0.1	34	34	0.1	0.4	291	291	0.4
Some College	0.3	67	67	0.3	0.2	67	67	0.2	0.3	134	134	0.3
College Graduate	0.3	26	26	0.2	0.0	0	0	0.0	0.1	26	26	0.1
> College	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0
Total	1.0	923	681	0.7	0.1	101	101	0.1	0.5	1024	782	0.4

Table 8.—Rate Per Drinking-Driver Arrest for Episodes of Driving Within Two Hours of Drinking, Driving Over the Legal Limit, and Being Stopped by the Police in the Past 12 Months, Among Persons Aged 16 and Older, by Drinker Type. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995

Sex	Drinker Type	Drinking-Driver Arrest			Number of Episodes per Arrest		
		No. of Persons (in 000's)	No. of Arrests (in 000'S)	Rate Per Person	Drink Driving*†	Over Legal Limit†	Stopped by Police†
Male	Heavy Drinker	335	542	1.6	284	16	3
	Moderate Drinker	87	87	1.0	1432	88	9
	Light Drinker	259	294	1.1	1222	124	10
	Total	681	923	1.4	691	58	6

Table 8.—Rate Per Drinking-Driver Arrest of Episodes of Driving Within Two Hours of Drinking, Driving Over the Legal Limit, and Being Stopped

by the Police in the Past 12 Months, Among Persons Aged 16 and Older, by Drinker Type. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995 (cont).

Female	Heavy Drinker	34	34	1.0	438	23	7
	Moderate Drinker	67	67	1.0	541	41	5
	Light Drinker	0	0	0.0	-	-	-
Total		101	101	1.0	1515	360	12
Total	Heavy Drinker	369	576	1.6	293	16	3
	Moderate Drinker	154	154	1.0	1058	68	7
	Light Drinker	259	294	1.1	1562	240	12
Total		782	1024	1.3	772	88	6

*A dash (-) indicates that this value cannot be calculated since the denominator (number of arrests) is zero.

†Data for the past 12 months was obtained by annualizing 30-day data.

TABLE 9
Number and Rate per 100 Persons of Episodes for Impaired-Driving Related Events
for the U.S. Driving Population and for the U.S. Male Driving Population

Type of Event/Episode	U.S. (Males) in Millions of Episodes	Per 100 (Males) Persons in Millions of Episodes
Driving within two hours of drinking, 1995 NSDDAB	790.0 (638.0)	390.0 (660.0)
Had perhaps too much to drink, 1993 BRFSS	123.0 (101.0)	66.0 (112.0)
Driving over the legal limit, 1995 NSDDAB	90.0 (54.0)	45.0 (56.0)
Stops by police officer, 1995 NSDDAB	6.4 (5.2)	3.2 (5.4)
Arrests by police officer, FBI: 1995	1.5 (1.3)	0.7 (1.3)
Arrests by police officer, 1995 NSDDAB	1.0 (0.9)	0.5 (1.0)

Table 10.—Drinking-Driving Arrests Among Persons Aged 16 and Older, by Age: Data for the Past 12 Months from the 1995 National Survey of Drinking

and Driving Attitudes and Behavior (NSDDAB) and for 1995 from the FBI.*

Sex	Age	No. (in 000's)		Ratio	Rate Per 100 Persons	
		NSDDAB	FBI	NSDDAB/FBI	NSDDAB	FBI
Male	16-17	68	12	5.7	1.4	0.3
	18-20	131	81	1.6	3.0	1.9
	21-34	587	635	0.9	2.2	2.4
	35-54	136	466	0.3	0.4	1.3
	55+	0	67	0.0	0.0	0.3
	Total	923	1260	0.7	1.0	1.3

Table 10.—Drinking-Driving Arrests Among Persons Aged 16 and Older, by Age: Data for the Past 12 Months from the 1995 National Survey of Drinking

and Driving Attitudes and Behavior (NSDDAB) and for 1995 from the FBI* (cont).

Female	16-17	0	2	0.0	0.0	0.0
	18-20	0	11	0.0	0.0	0.3
	21-34	101	110	0.9	0.4	0.4
	35-54	0	84	0.0	0.0	0.2
	55+	0	7	0.0	0.0	0.0
	Total	101	214	0.5	0.1	0.2
Total	16-17	68	14	4.8	0.7	0.2
	18-20	131	92	1.4	1.5	1.1
	21-34	689	745	0.9	1.3	1.4
	35-54	136	550	0.2	0.2	0.7
	55+	0	74	0.0	0.0	0.1
	Total	1024	1475	0.7	0.5	0.7

*FBI numbers represent arrest counts adjusted for undercoverage.

Table A1.—Distribution of the 1995 United States Population and National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB) Survey
 Sample Size By Age, Race/Ethnicity and Education. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995

Characteristic	Male			Female			Total		
	U.S. Population,		NSDDAB	U.S. Population		NSDDAB	U.S. Population		NSDDAB
	%	(in 000's)	Sample	%	(in 000's)	Sample	%	(in 000's)	Sample
Age									
16-17	4.9	4778	254	4.3	4452	246	4.6	9230	500
18-20	4.5	4299	233	4.0	4201	213	4.2	8500	446
21-34	27.6	26689	466	25.8	26883	441	26.7	53572	907
35-54	38.0	36744	620	37.4	39040	650	37.7	75784	1270
55+	24.9	24081	409	28.6	29819	476	26.8	53900	885
Total	100.0	96591	1982	100.0	104396	2026	100.0	200986	4008

Table A1.—Distribution of the 1995 United States Population and National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB) Survey

Sample Size By Age, Race/Ethnicity and Education. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995 (cont).

Race/ethnicity

White/Non-Hisp.	75.1	72521	1487	77.6	81050	1541	76.4	153571	3028
Black/Non-Hisp.	9.7	9358	194	10.3	10743	242	10.0	20101	436
Hispanic	10.3	9936	187	8.5	8900	165	9.4	18836	352
Other	4.9	4775	114	3.5	3702	78	4.2	8478	192
Total	100.0	96591	1982	100.0	104396	2026	100.0	200986	4008

Education

< High School	16.3	15773	455	15.3	15976	451	15.8	31749	906
High School	31.9	30824	588	36.5	38135	666	34.3	68960	1254
Some College	23.9	23132	452	25.8	26984	498	24.9	50115	950
College Graduate	16.6	16059	289	13.4	13978	253	14.9	30037	542
> College	11.2	10803	198	8.9	9322	158	10.0	20125	356
Total	100.0	96591	1982	100.0	104396	2026	100.0	200986	4008

Table A2.--Driving Within Two Hours of Drinking in the Past 12 Months Among Persons Aged 16 Years and Older. Comparison Between Yearly Number of Episodes and Annualized 30 Day Number of Episodes. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995

Characteristic	Male			Female			Total		
	Annualized Episodes (in 000's)	Yearly Episodes (in 000's)	Ratio Annualized/Yearly	Annualized Episodes (in 000's)	Yearly Episodes (in 000's)	Ratio Annualized/Yearly	Annualized Episodes (in 000's)	Yearly Episodes (in 000's)	Ratio Annualized/Yearly
Age									
16-17	1640	985	1.7	3159	1587	2.0	4799	2573	1.9
18-20	16427	12516	1.3	3670	6685	0.5	20098	19202	1.0
21-34	173221	117461	1.5	71035	53498	1.3	244256	170959	1.4
35-54	251002	174254	1.4	70617	41404	1.7	321619	215658	1.5
55+	195610	179023	1.1	4546	7104	0.6	200156	186128	1.1
Total	637900	484239	1.3	153027	110278	1.4	790928	594520	1.3

Table A2.--Driving Within Two Hours of Drinking in the Past 12 Months Among Persons Aged 16 Years and Older. Comparison Between Yearly Number

of Episodes and Annualized 30 Day Number of Episodes. National Survey of Drinking and Driving Attitudes and Behavior (NSDDAB): 1995 (cont).

Race/ethnicity

White, Non-Hisp.	567657	430488	1.3	115416	99647	1.2	683074	530135	1.3
Black, Non-Hisp.	21513	24779	0.9	17949	2923	6.1	39462	27702	1.4
Hispanic	30805	16576	1.9	3330	3581	0.9	34135	20157	1.7
Other	17926	12397	1.4	16332	4129	4.0	34258	16525	2.1
Total	637901	484240	1.3	153027	110280	1.4	790929	594519	1.3

Education

< High School	30352	14374	2.1	22145	5028	4.4	52497	19402	2.7
High School	206653	130520	1.6	53283	34901	1.5	259936	165421	1.6
Some College	163785	164915	1.0	41398	43059	1.0	205183	207974	1.0
College Graduate	160619	119453	1.3	24275	18646	1.3	184894	138098	1.3
> College	76492	54977	1.4	11927	8646	1.4	88418	63624	1.4
Total	637901	484239	1.3	153028	110280	1.4	790928	594519	1.3